

CLAIM LISTING / AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the present patent application:

1. (Currently Amended) A method for minimizing formation of thermal nitrogen oxides in an incineration apparatus during incineration of: (i) a waste stream; (ii) an oxygen-containing stream comprising air; and (iii) supplemental fuel comprising at least one hydrocarbon, which is burned to incinerate the waste stream, during which thermal nitrogen oxides are formed, said method comprising the steps of:
 - a. producing a reaction product comprising a hot mixed gas stream by feeding a reaction feed mixture through an inlet of a reaction vessel, and passing the reaction product through an outlet of the reaction vessel;
 - b. producing a cooled mixed gas stream by directing the hot mixed gas stream through a heat exchanger system;
 - c. separating the cooled mixed gas stream into a cooled crude product stream and a cooled waste stream;
 - d. producing a preheated waste stream by directing the cooled waste stream through a heat exchanger system which transfers thermal energy from another process stream to the waste stream; and
 - e. incinerating the preheated waste stream by directing it into an incinerator with an amount of the at least one hydrocarbon fuel which is less than the amount required to incinerate the cooled waste stream of step (c),
wherein, during incineration step (e), a decreased amount of thermal nitrogen oxides is produced, compared to the amount of thermal nitrogen oxides that would have been produced by incinerating the cooled waste stream of step (c) without performing preheating step (d).
2. (Original) The method of claim 1, wherein the heat exchanger system of step b is the same as the heat exchanger system of step d.

3. (Original) The process of claim 1, wherein the cooled crude product comprises acrylic acid.

4. (Original) The method of claim 1, wherein separation of the cooled mixed gas stream into the cooled crude product stream and the cooled waste stream comprises passing the cooled mixed gas stream into a separator column.

Claim 5 (Cancelled).

6. (Original) The method of claim 1, wherein the heat exchanger system of either step b, or step d, or both steps b and d, comprises a shell and tube exchanger configured to ensure that each constituent of the hot mixed gas stream remains above the respective constituent's melting point.

Claim 7 (Cancelled).

8. (Currently Amended) The method of claim 1, wherein the gaseous emissions thermal nitrogen oxides comprise at least one of the following: nitrogen dioxide, and nitric oxide, and carbon monoxide.

9. (Currently Amended) The method of claim 1, wherein the preheated waste stream is incinerated, at least in part, by preheating the ~~through the use of a preheated supplemental fuel.~~

10. (Currently Amended) The method of claim 9, wherein the preheated waste stream is incinerated, at least in part, by preheating the ~~through the use of a preheated oxygen-containing stream.~~